PP# 9E2224

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PP# 9E2224 Trifluralin in or on upland cress. Review of analytical method and residue data.

Elizabeth M. K. Leovey, Chemist, Residue Chemistry Branch, HED (TS-769)

Clinton Fletcher, Minor Uses Officer, Special Registrations Section, RD (TS-767) and TOX, HED (TS-769)

Thru: Chief, RCB

Interregional Research Project No. 4 Associate Coordinator, G. M. Markle and National Director, Dr. R. H. Kupelian, State Agricultural Experiment Station, Rutgers University, on behalf of the IR-4 technical committee and the Agricultural Experiment Station of Tennessee proposes that the established tolerance of 0.05 ppm for negligible residues of the herbicide trifluralin (α,α,α-trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine) in or on the crop group, leafy vegetables, be extended to include the raw agricultural commodity, Upland cress.

This proposal is based upon the fact that upland cress and other leafy vegetables may be expected to have a similar potential for leaf exposure to pesticides. Additionally, upland cress and other leafy vegetables (e.g., mustard and turnip greens, etc.) are similar in general culture and usage.

Established tolerances (40 CFR 180.207) for trifluralin residues are 2 ppm in or on mung bean sprouts, 1 ppm in or on carrots, 0.2 ppm (negligible residue) in or on alfalfa hay, and 0.05 ppm (negligible residue) in or on a variety of commodities, including leafy vegetables. Tolerances for barley and sorghum grains are still pending (PP# 9F2172).

Letters (W. W. Wright and L. E. Peterson to Registration Division) are submitted as part of this petition which authorize the use of data contained in certain petitions submitted by Elanco Products Co. in the review of this petition.

No residue data was submitted. Data for leafy vegetables will be translated to upland cress.

Treflan is in pre-RPAR review with a decision expected in the near future (T. Miller, SPRD).

Conclusions

1. The metabolism of trifluralin in plants is adequately understood for the proposed use. The residue component of interest is the parent, trifluralin.

2. Adequate analytical methods are available to enforce the proposed tolerance.

3. Trifluralin residues in or on upland cress are not expected to exceed the proposed 0.05 ppm tolerance as concluded from data for other leafy vegetables.

4. Upland cress is not a feed item. Therefore secondary residues in meat, milk, poultry and eggs are not anticipated from the proposed use.

Recommendation

Toxicological and RPAR considerations permitting, RCB recommends for the proposed tolerance.

Detailed Considerations

Formulations

Two formulations are requested for use, Treflan E.C.(R) (EPA Reg. No. 1471-35-AD) and Treflan(R) 5G (EPA Reg. No. 1471-59-AB).

Treflan E.C. is an emulsifiable concentrate containing 4 lbs a.i./gal. Treflan 5G is a granular formulation containing 5% trifluralin.

All inerts have been cleared under Sec. 180.1001.

The manufacturing process for trifluralin is discussed in PP# 4F1509.

Proposed Use

To control annual grasses and broadleaf weeds, one treatment of trifluralin is to be applied by ground equipment at 0.5 to 0.75 lb active ingredient per acre, within 10 days prior to planting upland cress.

The remainder of the labels are identical to previous labels with regard to soil incorporation and crop rotation restrictions which vary depending on region.

Nature of Residue

The metabolic fate of trifluralin in plants has been extensively discussed in our reviews of PP# 7G0533 (T. Woodward, 10/31/66), PP# 7F0555 (R. Arnold and J. Wolff, 5/24/67) and PP# 9F0851 (A. Smith, 9/9/69). No new metabolism data was submitted with this petition.

Briefly, trifluralin is absorbed and translocated in plants. Using $^{14}CF_3$ labeled trifluralin, the major routes of degradation in carrots, peanuts, soybeans, sweet potatoes and cotton included step-wise dealkylation of the aniline group, reduction of the nitro function, and to a lesser extent, carboxylation of the trifluoromethyl function.

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Analytical Method

Trifluralin is extracted from a crop by blending with methanol and subsequently extracting, after dilution with aqueous salt solution, into methylene chloride. After concentration, the residue is dissolved in hexane, cleaned up on a florisil column and quantitated by gas chromatography with an electron capture detector.

This method can be modified to eliminate contamination from BHC, ethion and zineb. After extraction of the plant, the residue is dissolved in chloroform and the trifluralin is resolved by thin layer chromatography. After elution of the silica gel from the appropriate tlc zone with acetone and concentration, the sample is analyzed by GC.

The former method underwent a successful method trial (PP# 7F0555, memo G. P. Makhijani, 6/13/67) on cucumbers and carrots at fortification levels of 0.05 and 0.1 ppm and 1.0 and 1.5 ppm respectively. Control values were <0.002 ppm for cucumbers and <0.01 ppm for carrots. Recoveries ranged from 78-87% and 80-93% respectively. The method was concluded to be adequate to enforce a 0.05 ppm tolerance for carrots and cucumbers. We will translate this conclusion to upland cress. Therefore an adequate method is available to enforce the proposed tolerance.

Residue Data

No residue data was submitted. We will translate data from other leafly vegetables. Residues in or on broccoli, brussels sprouts, cabbage and cauliflower from incorporation of Treflan EC into soil at the rate of 0.5 lb - 1.5 lb/A pre or post planting (PP# 8F0664, memo: W. J. Boodee, 1/29/68) were not detectable, <0.01 ppm. The 1.5 lb act/A rate is 2x the rate proposed here for upland cress. No detectable residues, (<0.01 ppm) were observed in or on sugar beet tops (PP# 6F0493) from the same use as is proposed for upland cress.

Based on the data for these crops, we expect that residues in or on upland cress will not exceed the proposed 0.05 ppm tolerance. Eventhough only one formulation was tested, Treflan E.C., we anticipate that residues in or on upland cress from the pre-plant application of Treflan 5G, will also not exceed the proposed tolerance.

Meat, Milk, Poultry, and Eggs

Upland cress is not a feed item. Therefore we anticipate no secondary residues in meat, milk, poultry or eggs from the proposed use.

Elizabeth M. K. Leovey, Ph.D.

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